

# Aelian Biotechnology

## Combining CRISPR Screening with Single Cell RNA Sequencing



Thomas Moser

**D**rug discovery remains a slow and ineffective process and many drug candidates fail in the various clinical phases, leading to immense costs. Failure is mainly attributed to lack of safety or lack of efficacy. Both of these could be remedied by improving the selection of the appropriate drug targets. To aid these drug development and discovery companies stay-on-top of their clinical trial hindrances and identify valid drug targets quickly, Aelian Biotechnology, a technology company, offers its CRISPR Screening platform. “Our process is unique, we have successfully developed a system that allows the coupling of CRISPR Screening with single-cell RNA sequencing,” explains Tilmann Buerckstuemmer, CSO at Aelian Biotechnology. “We believe that our technology is broadly applicable across many disease areas and biological questions and thus provides more relevant results than conventional CRISPR screens,” adds Thomas Moser, CEO at Aelian Biotechnology.

With a full understanding that the use of oversimplified cellular models limits the discovery and validation of drug targets, Aelian Biotechnology has designed its system to work with a more elaborate set of cell line models, including stem-cell derived models and primary cell types.” The quality of a CRISPR screen is very much a function of the quality of the underlying cellular models. Hence, we aspire to work with the most sophisticated models,” elucidates Moser.

Aelian offers an end-to-end solution for CRISPR screens coupled to single-cell RNA sequencing, which initiates from clients nominating the cell line that they want to test as part of their processes. “We take those cell line models in house and perform the entire workflow from guide design, lentiviral manufacturing, infecting target cells, running the single-cell sequencing, and performing the bioinformatics analysis,” explains Buerckstuemmer. One single CRISPR screen can analyze tens of thousand of single-cells, thus warranting screens at unprecedented scale and precision. Besides, the company’s expertise in computational biology allows the timely analysis of large datasets, ensuring proper statistical foundation for all major conclusions.

Currently, Aelian is working with a major pharma company to aid them in identifying the target of a compound that has emerged from a phenotypic drug screen. The phenotypic screen yielded a compound with interesting pharmacological activity whose cellular target is unknown. To uncover the target, Aelian conducted a CRISPR screen, hoping to identify gene knockouts that show the same effect as



Tilmann Buerckstuemmer

the compound – thus implying that the compounds targets the gene product.

As one of the handful of companies across the globe capable of delivering CRISPR Screening with single-cell RNA Sequencing, Aelian is quickly carving a name for itself as a top solution provider in the drug discovery



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arena. Going forward, the company aspires to further strengthen its mission of helping customers solve the problems in the early stages of drug discovery by providing them with a comprehensive end-to-end CRISPR Screening platform. 